

## CLAIMS

1) Device for filtering and regeneration of particles in the air, gases or mists characterized in that it comprises:

- 5       - corona-effect electrostatic precipitator assemblies comprising:
- a plurality of tubular collecting electrodes (4) that periodically become electrical resistors positioned on a heat-resistant support (2) and are connected (13) to the ground or earth and a power supply enabling them to be heated individually or several at the same time,
  - 10       - a same plurality of emissive electrodes (5) as collecting electrodes (4) positioned in the center of each collecting electrode and fastened to an insulating and/or insulated support (3) for a DC supply and the earth for an AC supply.

2) Device for filtering and regeneration of claim 1 characterized in that  
15       the emissive electrodes are aligned in the direction of the flux to be treated (5).

3) Device for filtering and regeneration of claim 1 or 2 characterized in that the emissive electrodes described above are complemented by emissive electrodes perpendicular to the flux to be treated to form one or more beams  
20       (6) aligned in the axis of the collecting electrodes.

4) Device for filtering and regeneration of claim 1 characterized in that the supports of the collecting electrodes (2) are dielectric.

5) Device for filtering and regeneration of claims 1 to 4 characterized in that they comprise an envelope (1) or housing.

25       6) Device for filtering and regeneration of any of claims 1 to 5 characterized in that it comprises a second or several other regenerating electrostatic precipitators (15).

7) Device for filtering and regeneration of any of claims 1 to 6 characterized in that it comprises a sound attenuator or silencer (18).

30       8) Device for filtering and regeneration of any of claims 1 to 7 characterized in that it comprises a gas oxidation catalyst (19).

9) Device for filtering and regeneration of any of claims 1 to 8 characterized in that it comprises a system for draining (22) the zones receiving the solid or liquid particles.

5 10) Device for filtering and regeneration of any of claims 1 to 9 characterized in that it comprises a door, hatch or cover (24) allowing access, cleaning and removal of each of these components.

10 11) Device for filtering and regeneration of any of claims 1 to 10 characterized in that it comprises one or more inertial air pre-filter (20) that uses the Brown or shock effects, eliminator plates, mist eliminators, cyclones or any other system designed to improve the air, gases or the mists to be treated.

15 12) Device for filtering and regeneration of any of claims 1 to 11 characterized in that it comprises one or more fine filters (21) that use the Brown or shock effects, eliminator plates, mist eliminators, cyclones or any other system designed to increase and ensure the efficiency of the system.

13) Device for filtering and regeneration of any of claims 1 to 12 characterized in that it comprises an inlet (11) for the flux to be treated and an outlet (12) for the treated flux.

20 14) Use of a device for filtering and regeneration of any of claims 1 to 12 to filter exhaust gases of a heat engine, whether self-propelled or not.

15 15) Use of a device for filtering and regeneration of any of claims 1 to 12 to filter air, gases and/or mists by extraction from a zone loaded with particles.

25 16) Use of a device for filtering and regeneration of any of claims 1 to 12 to filter air, gases and/or mists by admission from a zone to be protected from such pollutants.

17) Use of a device for filtering and regeneration of any of claims 1 to 12 to filter air, gases and/or mists by regenerating a zone loaded with particles.